WHAT IS CLAIMED IS:

1. A method of identifying a gene involved in a complex disease comprising the steps of:

(i) identifying a region of the genome neighboring a disease-associated marker;

(ii) comparing the sequence of the 5' regulatory region of a consensus L1 sequence to the intronic region of genes or predicted genes or to the 5' or 3' regulatory region of genes or predicted genes; and

(iii) identifying genes containing a full-length L1 element in their intronic region or containing a full-length L1 element with high sequence fidelity to the L1 consensus sequence in their 5' or 3' regulatory region,

wherein said genes identified in step (iii) are involved in a complex disease.

2. The method of claim 1, wherein the high fidelity L1 sequence is at least about 95% similar to the sequence of nucleotides 1-884 of SEQ ID NO:1.

3. The method of claim 1, wherein the complex disease is selected from the group consisting of systemic lupus erythematosus, multiple sclerosis, insulin-dependent diabetes mellitus, rheumatoid arthritis, phemphigus, psoriasis, autoimmune thyroid disease, scleroderma, mixed connective tissue disease, polymyositis, dermatomyositis, Sjögren's syndrome, pemphigoid, vitiligo, primary biliary cirrhosis, chronic active hepatitis, Crohn's disease, ulcerative colitis, pernicious anemia, schizophrenia, and Alzheimer disease.

4. A method of identifying an individual at risk for or suffering from a complex disease comprising the steps of:

(i) providing a sample from said individual ;

(ii) identifying intronic regions of genes containing full-length L1 elements or in 5' or 3' regulatory regions of genes containing a full-length high fidelity consensus L1 sequence of the individual's DNA from said sample; and

(iii) comparing said intronic regions of genes or said 5' or 3' regulatory regions of step (ii) with a control sample of DNA taken from an individual not susceptible to or at risk for or currently suffering from a complex disease

wherein said genes identified in step (ii) are involved in a complex disease

5. The method of claim 4, wherein the complex disease is selected from the group consisting of systemic lupus erythematosus, multiple sclerosis, insulin-dependent diabetes mellitus, rheumatoid arthritis, phemphigus, psoriasis, autoimmune thyroid disease, scleroderma, mixed connective tissue disease, polymyositis, dermatomyositis, Sjögren's syndrome, pemphigoid, vitiligo, primary biliary cirrhosis, chronic active hepatitis, Crohn's disease, ulcerative colitis, pernicious anemia, schizophrenia, and Alzheimer disease.

6. The method of claim 4, wherein said sample is blood, serum, saliva, urine, tears, sweat, synovial fluid, cerebrospinal fluid, or a solid tissue.

7. A method of identifying an individual at risk for or suffering from a complex disease comprising the steps of :

a. providing a sample from said individual suffering from a complex disease;

b. detecting the amount of L1 DNA, mRNA or a protein encoded by an L1 element in said sample;

c. comparing the amount of step (ii) with an amount of L1DNA, mRNA or a protein obtained from an individual not susceptible to or at risk for or suffering from a complex disease,

wherein if the amount detected in said sample obtained from said individual is greater than the amount of said control, said individual is at risk for or suffering from a complex disease.

8. The method of claim 7, wherein said sample is blood, serum, saliva, urine, tears, sweat, synovial fluid, cerebrospinal fluid, or a solid tissue.

9. The method of claim 7, wherein the complex disease is selected from the group consisting of systemic lupus erythematosus, multiple sclerosis, insulin-dependent diabetes mellitus, rheumatoid arthritis, phemphigus, psoriasis, autoimmune thyroid disease, scleroderma, mixed connective tissue disease, polymyositis, dermatomyositis, Sjögren's syndrome, pemphigoid, vitiligo, primary biliary cirrhosis, chronic active hepatitis, Crohn's disease, ulcerative colitis, pernicious anemia, schizophrenia, and Alzheimer disease.

10. A method of treating or preventing a complex disease, which method comprises

administering a therapeutically effective amount of an agent selected from the group consisting of an L1 antisense oligonucleotide, an antibody directed against L1 mRNA, and an antibody directed against a protein encoded by an L1 element.

11. The method of claim 10, wherein the complex disease is selected from the group consisting of systemic lupus erythematosus, multiple sclerosis, insulin-dependent diabetes mellitus, rheumatoid arthritis, phemphigus, psoriasis, autoimmune thyroid disease, scleroderma, mixed connective tissue disease, polymyositis, dermatomyositis, Sjögren's syndrome, pemphigoid, vitiligo, primary biliary cirrhosis, chronic active hepatitis, Crohn's disease, ulcerative colitis, pernicious anemia, schizophrenia, and Alzheimer disease.

12. A method for identifying an individual at risk for or suffering from a complex disease comprising the steps of:

(i) providing a sample obtained from said individual;

(ii) detecting antibodies directed against ribonucleo-protein particles having L1 mRNA complements in said sample

wherein said individual is at risk for or is suffering from a complex disease if said antibodies are present in said sample.

13. The method of claim 12, wherein the complex disease is selected from the group consisting of systemic lupus erythematosus, multiple sclerosis, insulin-dependent diabetes mellitus, rheumatoid arthritis, phemphigus, psoriasis, autoimmune thyroid disease, scleroderma, mixed connective tissue disease, polymyositis, dermatomyositis, Sjögren's syndrome, pemphigoid, vitiligo, primary biliary cirrhosis, chronic active hepatitis, Crohn's disease, ulcerative colitis, pernicious anemia, schizophrenia, and Alzheimer disease.

14. The method of claim 12, wherein said sample is blood, serum, saliva, urine, tears, sweat, synovial fluid, cerebrospinal fluid, or a solid tissue.

15. A method of identifying an individual at risk for or suffering from a complex disease comprising the steps of:

(i) providing a sample obtained from said individual;

(ii) analyzing said sample for the presence of auto antibodies directed against L1 DNA, nRNA or protein products

wherein said individual is at risk for or suffering from a complex disease if said antibodies are present in said sample.

16. The method of claim 15, wherein said sample is blood, serum, saliva, urine, tears, sweat, synovial fluid, cerebrospinal fluid, or a solid tissue.

17. The method of claim 15, wherein the complex disease is selected from the group consisting of systemic lupus erythematosus, multiple sclerosis, insulin-dependent diabetes mellitus, rheumatoid arthritis, phemphigus, psoriasis, autoimmune thyroid disease, scleroderma, mixed connective tissue disease, polymyositis, dermatomyositis, Sjögren's syndrome, pemphigoid, vitiligo, primary biliary cirrhosis, chronic active hepatitis, Crohn's disease, ulcerative colitis, pernicious anemia, schizophrenia, and Alzheimer disease.

18. The method of claim 15, wherein the complex disease is systemic lupus erythematosus.